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| 09/695,756      | 10/24/2000  | Thomas W. Voshell    | 500080.02           | 2589             |

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| EXAMINER |
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| ART UNIT | PAPER NUMBER |
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2133

DATE MAILED: 01/16/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/695,756**

Applicant(s)  
**Voshell**

Examiner  
**Samuel Lin**

Art Unit  
**2133**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on Jan 29, 2001

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) 41-67 is/are pending in the application.

4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☒ Claim(s) 49-53 is/are allowed.

6) ☒ Claim(s) 41-43, 45-48, and 54-64 is/are rejected.

7) ☒ Claim(s) 44 and 65-67 is/are objected to.

8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirements.

## Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some\* c) ☐ None of:

- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_

20) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 U.S.C. § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office Action:

*A person shall be entitled to a patent unless --*

*(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.*

Claim 41 is rejected under 35 U.S.C. § 102(a) as being anticipated by Tsukakoshi (U.S. Patent # 5,363,382). Tsukakoshi teaches memory fault analysis (access/test) by performing substitute address allocation (mapping) and compression [column 2, lines 35-50] as claimed.

Claim 45 is rejected under 35 U.S.C. § 102(a) as being anticipated by Tsukakoshi.  
The reasons are the same as stated for claim 41 above.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi as applied to claim 41 above. The reasons are the same as for claim 1 above. In addition, Tsukakoshi does not specifically show the decompressing of addresses for comparison. However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to decompress addresses for comparison. One of ordinary skill in the art would have been motivated to decompress any previously compressed data in order to convert the data back to usable form. One of ordinary skill in the art would also have been motivated to determine (by comparison) when failed memory locations are accessed in order to substitute redundant memory.

Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi as applied to claim 45 above. The reasons are the same as stated for claim 42 (and 45) above.

Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi as applied to claim 45 above. The reasons are the same as stated for claim 43 (and 45, 47) above.

Claim 54, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi. Tsukakoshi teaches the memory fault analysis (access/test) by performing substitute address allocation

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(mapping) and address compression (generating unique compressed address / codeword) [column 2, lines 35-50] as claimed. Tsukakoshi does not specifically show storage of defective memory cell addresses. However, this would have been obvious to a person having ordinary skill in the art at the time the invention was made. One of ordinary skill in the art would have been motivated to store the addresses of any defective memory cells found by fault analysis in order to continue performing data substitutions for any subsequent data to be read/written to defective memory cells.

Claims 55 and 58 are rejected over Tsukakoshi as applied to claim 54 above and further in view of Hoang et al. (U.S. Patent # 5,881,221). Tsukakoshi does not specifically teach temporary storage of defective memory cell addresses during power-up. However, Hoang et al. teaches power-on self testing of a computer system including memory cell [column 1]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to test for defective memory cells during power-on and to store the detected addresses during continuing (temporary) powered operation. One of ordinary skill in the art would have been motivated to perform testing and initialize an error corrected state to assure the reliable and correct operation of the computer.

Claims 59, 62, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi. The reasons are the same as stated for claims 54, 56, and 57 above.

Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi as applied to claim 59 above. Tsukakoshi further teaches a second fault analysis memory FAM [Figure 7].

Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi as applied to claim 59 above, and further in view of Hoang et al. The reasons are the same as stated for claims 55 and 58

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above. Tsukakoshi teaches testing upon power-up (all memory locations) before operation of a computer (including first memory access).

Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukakoshi. The reasons are the same as stated for claims 59 and 60 above.

### ***Claim Objections***

Claims 44, 65, 66, and 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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*Allowable Subject Matter*

Claims 49 - 53 are allowable over the prior art.

The following is a statement of reasons for the indication of allowable subject matter:

The present invention pertains to a method and apparatus for accessing data storage cells by identifying and replacing defective memory cells using compressed/decompressed addresses. The prior art teaches defective memory replacement. For example, Tsukakoshi teach the compression of addresses of defective memory cells to be replaced during testing.

However, the prior art taken alone or in combination fail to teach the novel features claimed in independent claims 49:

*generating a first hash code from requested address*  
*comparing first hash code to hash codes for decompressed addresses stored in a temporary memory array*  
*when a match is found, determining if an address stored in temporary memory array corresponds to the requested address*  
*accessing a spare memory array when an address stored in temporary memory array corresponds to the requested address .*

Therefore, claim 49 and its dependent claims 50 - 53 are allowable over the prior art.

Note: Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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**Any response to this action should be mailed to:**

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**or:**  
(703) 746-7239 ( for OFFICIAL communications intended for entry )  
**or:**  
(703) 746-7240 ( for NON-OFFICIAL or draft communications,  
please label "PROPOSED" or "DRAFT" )

**Hand-delivered responses should be brought to:**

Sixth Floor (Receptionist)  
Crystal Park II  
2121 Crystal Drive  
Arlington, VA


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Lin at (703) 305-9777 or *Samuel.Lin@USPTO.gov*. The examiner can normally be reached on Monday to Friday from 9:30 a.m. to 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady, can be reached at (703) 305-9595.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 306-5631.



Samuel Lin  
Patent Examiner  
Art Unit 2133



ALBERT DECADY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

January 9, 2002